

Claims:

1. A method of determining time-of-day in a mobile receiver, comprising:
 - obtaining expected pseudoranges to a plurality of satellites, said expected pseudoranges based on an initial position of said mobile receiver and an initial time-of-day;
 - obtaining expected line-of-sight data to said plurality of satellites;
 - measuring pseudoranges from said mobile receiver to said plurality of satellites; and
 - computing update data for said initial time-of-day using a mathematical model relating said pseudoranges, said expected pseudoranges, and said line-of-sight data.
2. The method of claim 1, further comprising:
 - updating said initial time-of-day using said update data to compute a time-tag; and
 - transmitting said pseudoranges and said time-tag to a server in wireless communication with said mobile receiver.
3. The method of claim 1, further comprising:
 - receiving acquisition assistance data at said mobile receiver from a server;
 - wherein said expected pseudoranges and said expected line-of-sight data are obtained from said acquisition assistance data.
4. The method of claim 1, further comprising:
 - measuring pseudorange rates at said mobile receiver;
 - obtaining almanac data; and
 - computing an approximate position of said mobile receiver using said pseudorange rates and said almanac data;
 - wherein said expected line-of-sight data is obtained in response to said approximate position and said almanac data.

5. The method of claim 1, further comprising:
 - obtaining almanac data;
 - obtaining an estimated position of said mobile receiver; and
 - computing an approximate position of said mobile receiver using said almanac data and said estimated position;wherein said expected line-of-sight data is obtained in response to said approximate position and said almanac data.
6. The method of claim 1, further comprising:
 - obtaining almanac data; and
 - obtaining an estimated position of said mobile receiver;wherein said expected line-of-sight data is obtained in response to said estimated position and said almanac data.
7. The method of claim 1, wherein said computing step comprises determining update data for a clock bias associated with said mobile receiver using said mathematical model.
8. The method of claim 7, further comprising:
 - detecting bit transitions within satellite navigation data transmitted by at least one of said plurality of satellites; and
 - updating said initial time-of-day in response to said detected bit transitions and said clock bias update data.
9. The method of claim 1, further comprising:
 - detecting bit transitions within satellite navigation data transmitted by at least one of said plurality of satellites;
 - decoding absolute time data from said satellite navigation data in response to said detected bit transitions; and
 - updating said initial time-of-day using said absolute time data.
10. The method of claim 9, wherein said absolute time data comprises a time-of-week count message.

11. Apparatus for determining time-of-day in a mobile receiver, comprising:
- a wireless transceiver for obtaining acquisition assistance data from a server, said acquisition assistance data comprising expected pseudoranges to a plurality of satellites based on an initial position of said mobile receiver and an initial time-of-day;
 - a satellite signal receiver for measuring pseudoranges from said mobile receiver to said plurality of satellites; and
 - a processor for obtaining expected line-of-sight data to said plurality of satellites and for computing update data for said initial time-of-day using a mathematical model relating said pseudoranges, said expected pseudoranges, and said expected line-of-sight data.
12. The apparatus of claim 11, further comprising:
- a clock circuit;
 - wherein said processor is further configured to calibrate said clock circuit using said update data.
13. The apparatus of claim 11, wherein said processor is configured to obtain said expected line-of-sight data from said acquisition assistance data.
14. The apparatus of claim 11, further comprising:
- a memory for storing almanac data associated with a constellation having said plurality of satellites;
 - wherein said satellite signal receiver is further configured to measure pseudorange rates; and
 - wherein said processor is further configured to compute an approximate position of said mobile receiver using said pseudorange rates and said almanac data and to obtain said expected line-of-sight data in response to said approximate position and said almanac data.
15. The apparatus of claim 11, further comprising:

a memory for storing almanac data associated with a constellation having said plurality of satellites;

wherein said processor is further configured to compute an approximate position of said mobile receiver using an estimated position of said mobile receiver and said almanac data and to obtain said expected line-of-sight data in response to said approximate position and said almanac data.

16. The apparatus of claim 11, wherein said processor is further configured to compute update data from a clock bias associated with said satellite signal receiver using said mathematical model.

17. The apparatus of claim 16, wherein said processor is further configured to detect bit transitions within satellite navigation data transmitted by at least one of said plurality of satellites and update said initial time-of-day in response to said detected bit transitions and said clock bias update data.

18. The apparatus of claim 11, wherein said processor is further configured to decode absolute time data from satellite navigation data transmitted by at least one of said plurality of satellites and update said initial time-of-day using said absolute time data.

19. The apparatus of claim 18, wherein said absolute time data comprises a time-of-week count message.

20. A position location system, comprising:

a mobile receiver comprising:

a wireless transceiver;

a satellite signal receiver for measuring pseudoranges from said mobile receiver to a plurality of satellites; and

a processor;

a server, in wireless communication with said mobile receiver, for transmitting acquisition assistance data to said mobile receiver, said acquisition

assistance data comprising expected pseudoranges to said plurality of satellites based on an initial position of said mobile receiver and an initial time-of-day;

wherein said processor is configured to obtain expected line-of-sight data to said plurality of satellites and to compute update data for said initial time-of-day using a mathematical model relating said pseudoranges, said expected pseudoranges, and said expected line-of-sight data; and

wherein said wireless transceiver is configured to transmit said measured pseudoranges and said update data to said server.

21. The system of claim 20, wherein said server is configured to locate position of said mobile receiver in response to said measured pseudoranges and said update data.